

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Stantec
1060 Andrew Drive
Suite 140
West Chester PA 19380

Report Date: June 28, 2017

Project: MHIC AOI5

Submittal Date: 06/19/2017
Group Number: 1815034
PO Number: MARCUS HOOK
State of Sample Origin: PA

Client Sample Description

MW-554-20170616 Grab Groundwater
MW-583-20170616 Grab Groundwater
TB-20170616 Water

Lancaster Labs

(LL) #

9056751

9056752

9056753

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To Stantec
Electronic Copy To Sunoco c/o Stantec

Attn: Andrew Bradley
Attn: Jenny DeBoer

Respectfully Submitted,



Amek Carter
Specialist

(717) 556-7252

Project Name: MHIC AOI5
LL Group #: 1815034

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

No additional comments are necessary.

Sample Description: MW-554-20170616 Grab Groundwater
MHIC AOI 5

LL Sample # WW 9056751
LL Group # 1815034
Account # 16657

Project Name: MHIC AOI5

Collected: 06/16/2017 14:45 by JC

Stantec

1060 Andrew Drive

Submitted: 06/19/2017 12:52

Suite 140

Reported: 06/28/2017 10:30

West Chester PA 19380

55405

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B ug/l					
10335	Benzene	71-43-2	N.D.	0.5	1
10335	sec-Butylbenzene	135-98-8	N.D.	1	1
10335	tert-Butylbenzene	98-06-6	N.D.	1	1
10335	Cyclohexane	110-82-7	N.D.	2	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.5	1
10335	Ethylbenzene	100-41-4	N.D.	0.5	1
10335	n-Hexane	110-54-3	N.D.	2	1
10335	Isopropylbenzene	98-82-8	N.D.	1	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	1
10335	Toluene	108-88-3	N.D.	0.5	1
10335	1,2,4-Trimethylbenzene	95-63-6	N.D.	1	1
10335	1,3,5-Trimethylbenzene	108-67-8	N.D.	1	1
10335	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC/MS Semivolatiles SW-846 8270C ug/l					
14247	Acenaphthene	83-32-9	0.1 J	0.1	1
14247	Anthracene	120-12-7	0.2 J	0.1	1
14247	Benzo(a)anthracene	56-55-3	N.D.	0.1	1
14247	Benzo(a)pyrene	50-32-8	N.D.	0.1	1
14247	Benzo(b)fluoranthene	205-99-2	N.D.	0.1	1
14247	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	1
14247	Benzo(k)fluoranthene	207-08-9	N.D.	0.1	1
14247	1,1'-Biphenyl	92-52-4	N.D.	0.5	1
14247	Di-n-butylphthalate	84-74-2	N.D.	2	1
14247	Chrysene	218-01-9	N.D.	0.1	1
14247	Dibenz(a,h)anthracene	53-70-3	N.D.	0.1	1
14247	Diethylphthalate	84-66-2	N.D.	2	1
14247	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1
14247	2,4-Dinitrophenol	51-28-5	N.D.	11	1
14247	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	1
14247	Fluoranthene	206-44-0	0.1 J	0.1	1
14247	Fluorene	86-73-7	N.D.	0.1	1
14247	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.1	1
14247	2-Methylnaphthalene	91-57-6	N.D.	0.1	1
14247	2-Methylphenol	95-48-7	N.D.	0.5	1
14247	4-Methylphenol	106-44-5	N.D.	0.5	1
3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.					
14247	Naphthalene	91-20-3	N.D.	0.1	1
14247	4-Nitrophenol	100-02-7	N.D.	11	1
14247	Phenanthrene	85-01-8	N.D.	0.1	1
14247	Phenol	108-95-2	N.D.	0.5	1
14247	Pyrene	129-00-0	0.2 J	0.1	1
14247	Pyridine	110-86-1	N.D.	2	1
14247	Quinoline	91-22-5	N.D.	1	1
Volatiles by SW-846 8011 ug/l					
Extraction					

Sample Description: MW-554-20170616 Grab Groundwater
MHIC AOI 5

LL Sample # WW 9056751
LL Group # 1815034
Account # 16657

Project Name: MHIC AOI5

Collected: 06/16/2017 14:45 by JC

Stantec

1060 Andrew Drive

Submitted: 06/19/2017 12:52

Suite 140

Reported: 06/28/2017 10:30

West Chester PA 19380

55405

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Volatiles by Extraction					
10398	Ethylene dibromide	106-93-4	N.D.	0.0094	1
Metals Dissolved					
07052	Cobalt	7440-48-4	N.D.	1.9	1
07055	Lead	7439-92-1	N.D.	6.2	1
07061	Nickel	7440-02-0	N.D.	2.8	1
07071	Vanadium	7440-62-2	N.D.	1.6	1
07072	Zinc	7440-66-6	N.D.	5.4	1

03277 Lab Filtration - Metals

The filtration time for dissolved metals is to be within 15 minutes from collection. Since the filtration occurred after receipt in the laboratory, the 15 minute criteria was exceeded.

Sample Comments

This sample was filtered in the lab for dissolved metals.
PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/18.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	Evergreen Comprehensive VOCs	SW-846 8260B	1	Y171723AA	06/22/2017 01:17	Kevin D Kelly	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y171723AA	06/22/2017 01:17	Kevin D Kelly	1
14247	Skinner 8270C MINI	SW-846 8270C	1	17173WAG026	06/24/2017 01:32	Brandon K Cordova	1
10467	BNA Water Extraction Skinner	SW-846 3510C	1	17173WAG026	06/22/2017 19:15	Christine Gleim	1
10398	EDB in Wastewater	SW-846 8011	1	171710016A	06/22/2017 22:56	Heather M Miller	1
07786	EDB Extraction (8011)	SW-846 8011	1	171710016A	06/20/2017 22:15	Edwin Ortiz	1
07052	Cobalt	SW-846 6010B	1	171730184801	06/24/2017 10:47	Eric L Eby	1
07055	Lead	SW-846 6010B	1	171730184801	06/24/2017 10:47	Eric L Eby	1
07061	Nickel	SW-846 6010B	1	171730184801	06/24/2017 10:47	Eric L Eby	1
07071	Vanadium	SW-846 6010B	1	171730184801	06/24/2017 10:47	Eric L Eby	1
07072	Zinc	SW-846 6010B	1	171730184801	06/24/2017 10:47	Eric L Eby	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	171730184801	06/23/2017 16:22	Barbara A Kane	1

Sample Description: MW-583-20170616 Grab Groundwater
MHIC AOI 5

LL Sample # WW 9056752
LL Group # 1815034
Account # 16657

Project Name: MHIC AOI5

Collected: 06/16/2017 16:25 by JC

Stantec

1060 Andrew Drive

Submitted: 06/19/2017 12:52

Suite 140

Reported: 06/28/2017 10:30

West Chester PA 19380

58305

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Volatiles SW-846 8260B ug/l					
10335	Benzene	71-43-2	N.D.	0.5	1
10335	sec-Butylbenzene	135-98-8	N.D.	1	1
10335	tert-Butylbenzene	98-06-6	N.D.	1	1
10335	Cyclohexane	110-82-7	N.D.	2	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.5	1
10335	Ethylbenzene	100-41-4	N.D.	0.5	1
10335	n-Hexane	110-54-3	N.D.	2	1
10335	Isopropylbenzene	98-82-8	N.D.	1	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	1	0.5	1
10335	Toluene	108-88-3	N.D.	0.5	1
10335	1,2,4-Trimethylbenzene	95-63-6	N.D.	1	1
10335	1,3,5-Trimethylbenzene	108-67-8	N.D.	1	1
10335	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC/MS Semivolatiles SW-846 8270C ug/l					
14247	Acenaphthene	83-32-9	N.D.	0.1	1
14247	Anthracene	120-12-7	N.D.	0.1	1
14247	Benzo(a)anthracene	56-55-3	N.D.	0.1	1
14247	Benzo(a)pyrene	50-32-8	0.1 J	0.1	1
14247	Benzo(b)fluoranthene	205-99-2	N.D.	0.1	1
14247	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	1
14247	Benzo(k)fluoranthene	207-08-9	N.D.	0.1	1
14247	1,1'-Biphenyl	92-52-4	N.D.	0.5	1
14247	Di-n-butylphthalate	84-74-2	N.D.	2	1
14247	Chrysene	218-01-9	N.D.	0.1	1
14247	Dibenz(a,h)anthracene	53-70-3	N.D.	0.1	1
14247	Diethylphthalate	84-66-2	N.D.	2	1
14247	2,4-Dimethylphenol	105-67-9	N.D.	0.5	1
14247	2,4-Dinitrophenol	51-28-5	N.D.	10	1
14247	bis(2-Ethylhexyl)phthalate	117-81-7	N.D.	2	1
14247	Fluoranthene	206-44-0	N.D.	0.1	1
14247	Fluorene	86-73-7	N.D.	0.1	1
14247	Indeno(1,2,3-cd)pyrene	193-39-5	0.1 J	0.1	1
14247	2-Methylnaphthalene	91-57-6	N.D.	0.1	1
14247	2-Methylphenol	95-48-7	N.D.	0.5	1
14247	4-Methylphenol	106-44-5	N.D.	0.5	1
	3-Methylphenol and 4-methylphenol cannot be resolved under the chromatographic conditions used for sample analysis. The result reported for 4-methylphenol represents the combined total of both compounds.				
14247	Naphthalene	91-20-3	N.D.	0.1	1
14247	4-Nitrophenol	100-02-7	N.D.	10	1
14247	Phenanthrene	85-01-8	N.D.	0.1	1
14247	Phenol	108-95-2	N.D.	0.5	1
14247	Pyrene	129-00-0	0.2 J	0.1	1
14247	Pyridine	110-86-1	N.D.	2	1
14247	Quinoline	91-22-5	N.D.	1	1
Volatiles by SW-846 8011 ug/l					
Extraction					

Sample Description: MW-583-20170616 Grab Groundwater
MHIC AOI 5

LL Sample # WW 9056752
LL Group # 1815034
Account # 16657

Project Name: MHIC AOI5

Collected: 06/16/2017 16:25 by JC

Stantec

1060 Andrew Drive

Submitted: 06/19/2017 12:52

Suite 140

Reported: 06/28/2017 10:30

West Chester PA 19380

58305

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Volatiles by Extraction					
10398	Ethylene dibromide	106-93-4	N.D.	0.0094	1
Metals Dissolved					
07052	Cobalt	7440-48-4	N.D.	1.9	1
07055	Lead	7439-92-1	N.D.	6.2	1
07061	Nickel	7440-02-0	N.D.	2.8	1
07071	Vanadium	7440-62-2	N.D.	1.6	1
07072	Zinc	7440-66-6	N.D.	5.4	1

03277 Lab Filtration - Metals

The filtration time for dissolved metals is to be within 15 minutes from collection. Since the filtration occurred after receipt in the laboratory, the 15 minute criteria was exceeded.

Sample Comments

This sample was filtered in the lab for dissolved metals.
PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/18.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	Evergreen Comprehensive VOCs	SW-846 8260B	1	Y171723AA	06/22/2017 01:39	Kevin D Kelly	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y171723AA	06/22/2017 01:39	Kevin D Kelly	1
14247	Skinner 8270C MINI	SW-846 8270C	1	17173WAG026	06/24/2017 02:02	Brandon K Cordova	1
10467	BNA Water Extraction Skinner	SW-846 3510C	1	17173WAG026	06/22/2017 19:15	Christine Gleim	1
10398	EDB in Wastewater	SW-846 8011	1	171710016A	06/22/2017 23:27	Heather M Miller	1
07786	EDB Extraction (8011)	SW-846 8011	1	171710016A	06/20/2017 22:15	Edwin Ortiz	1
07052	Cobalt	SW-846 6010B	1	171730184801	06/24/2017 11:06	Eric L Eby	1
07055	Lead	SW-846 6010B	1	171730184801	06/24/2017 11:06	Eric L Eby	1
07061	Nickel	SW-846 6010B	1	171730184801	06/24/2017 11:06	Eric L Eby	1
07071	Vanadium	SW-846 6010B	1	171730184801	06/24/2017 11:06	Eric L Eby	1
07072	Zinc	SW-846 6010B	1	171730184801	06/24/2017 11:06	Eric L Eby	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	171730184801	06/23/2017 16:22	Barbara A Kane	1

Sample Description: TB-20170616 Water
MHIC AOI 5

LL Sample # WW 9056753
LL Group # 1815034
Account # 16657

Project Name: MHIC AOI5

Collected: 06/16/2017

Stantec
1060 Andrew Drive
Suite 140
West Chester PA 19380

Submitted: 06/19/2017 12:52

Reported: 06/28/2017 10:30

05TBK

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS	Volatiles	SW-846 8260B	ug/l	ug/l	
10335	Benzene	71-43-2	N.D.	0.5	1
10335	sec-Butylbenzene	135-98-8	N.D.	1	1
10335	tert-Butylbenzene	98-06-6	N.D.	1	1
10335	Cyclohexane	110-82-7	N.D.	2	1
10335	1,2-Dibromoethane	106-93-4	N.D.	0.5	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.5	1
10335	Ethylbenzene	100-41-4	N.D.	0.5	1
10335	n-Hexane	110-54-3	N.D.	2	1
10335	Isopropylbenzene	98-82-8	N.D.	1	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	1
10335	Naphthalene	91-20-3	N.D.	1	1
10335	Toluene	108-88-3	N.D.	0.5	1
10335	1,2,4-Trimethylbenzene	95-63-6	N.D.	1	1
10335	1,3,5-Trimethylbenzene	108-67-8	N.D.	1	1
10335	Xylene (Total)	1330-20-7	N.D.	0.5	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/18.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	Evergreen Comprehensive VOCs	SW-846 8260B	1	Y171723AA	06/21/2017 22:42	Kevin D Kelly	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y171723AA	06/21/2017 22:42	Kevin D Kelly	1

Quality Control Summary

Client Name: Stantec
Reported: 06/28/2017 10:30

Group Number: 1815034

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL
	ug/l	ug/l
Batch number: Y171723AA	Sample number(s): 9056751-9056753	
Benzene	N.D.	0.5
sec-Butylbenzene	N.D.	1
tert-Butylbenzene	N.D.	1
Cyclohexane	N.D.	2
1,2-Dibromoethane	N.D.	0.5
1,2-Dichloroethane	N.D.	0.5
Ethylbenzene	N.D.	0.5
n-Hexane	N.D.	2
Isopropylbenzene	N.D.	1
Methyl Tertiary Butyl Ether	N.D.	0.5
Naphthalene	N.D.	1
Toluene	N.D.	0.5
1,2,4-Trimethylbenzene	N.D.	1
1,3,5-Trimethylbenzene	N.D.	1
Xylene (Total)	N.D.	0.5
Batch number: 17173WAG026	Sample number(s): 9056751-9056752	
Acenaphthene	N.D.	0.1
Anthracene	N.D.	0.1
Benzo(a)anthracene	N.D.	0.1
Benzo(a)pyrene	N.D.	0.1
Benzo(b)fluoranthene	N.D.	0.1
Benzo(g,h,i)perylene	N.D.	0.1
Benzo(k)fluoranthene	N.D.	0.1
1,1'-Biphenyl	N.D.	0.5
Di-n-butylphthalate	N.D.	2
Chrysene	N.D.	0.1
Dibenz(a,h)anthracene	N.D.	0.1
Diethylphthalate	N.D.	2
2,4-Dimethylphenol	N.D.	0.5
2,4-Dinitrophenol	N.D.	10
bis(2-Ethylhexyl)phthalate	N.D.	2
Fluoranthene	N.D.	0.1
Fluorene	N.D.	0.1
Indeno(1,2,3-cd)pyrene	N.D.	0.1
2-Methylnaphthalene	N.D.	0.1
2-Methylphenol	N.D.	0.5
4-Methylphenol	N.D.	0.5
Naphthalene	N.D.	0.1
4-Nitrophenol	N.D.	10
Phenanthrene	N.D.	0.1

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Stantec
Reported: 06/28/2017 10:30

Group Number: 1815034

Method Blank (continued)

Analysis Name	Result	MDL
	ug/l	ug/l
Phenol	N.D.	0.5
Pyrene	N.D.	0.1
Pyridine	N.D.	2
Quinoline	N.D.	1
Batch number: 171710016A	Sample number(s): 9056751-9056752	
Ethylene dibromide	N.D.	0.010
Batch number: 171730184801	Sample number(s): 9056751-9056752	
Cobalt	N.D.	1.9
Lead	N.D.	6.2
Nickel	N.D.	2.8
Vanadium	N.D.	1.6
Zinc	N.D.	5.4

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l					
Batch number: Y171723AA	Sample number(s): 9056751-9056753								
Benzene	20	21.4	20	21.37	107	107	78-120	0	30
sec-Butylbenzene	20	22.01	20	21.62	110	108	77-120	2	30
tert-Butylbenzene	20	19.91	20	19.51	100	98	78-120	2	30
Cyclohexane	20	16.07	20	16.01	80	80	67-121	0	30
1,2-Dibromoethane	20	20.99	20	21.02	105	105	75-120	0	30
1,2-Dichloroethane	20	20.99	20	20.79	105	104	66-128	1	30
Ethylbenzene	20	21.54	20	21.38	108	107	78-120	1	30
n-Hexane	20	16.8	20	16.33	84	82	52-147	3	30
Isopropylbenzene	20	19.84	20	19.98	99	100	80-120	1	30
Methyl Tertiary Butyl Ether	20	20.08	20	20.07	100	100	75-120	0	30
Naphthalene	20	21.06	20	20.66	105	103	59-120	2	30
Toluene	20	21.38	20	21.21	107	106	80-120	1	30
1,2,4-Trimethylbenzene	20	21.24	20	20.95	106	105	75-120	1	30
1,3,5-Trimethylbenzene	20	21.58	20	21.41	108	107	75-120	1	30
Xylene (Total)	60	63.86	60	63.84	106	106	80-120	0	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 17173WAG026	Sample number(s): 9056751-9056752								
Acenaphthene	50	45.68	50	38.94	91	78	64-121	16	30
Anthracene	50	47.5	50	43.65	95	87	72-120	8	30
Benzo(a)anthracene	50	44.32	50	39.95	89	80	74-124	10	30
Benzo(a)pyrene	50	46.38	50	41.13	93	82	71-119	12	30
Benzo(b)fluoranthene	50	49.85	50	45.13	100	90	72-124	10	30
Benzo(g,h,i)perylene	50	43.03	50	39.41	86	79	61-124	9	30
Benzo(k)fluoranthene	50	53.06	50	47.52	106	95	73-121	11	30

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Stantec
Reported: 06/28/2017 10:30

Group Number: 1815034

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
1,1'-Biphenyl	50	43.05	50	34.86	86	70	63-114	21	30
Di-n-butylphthalate	50	48.45	50	45.01	97	90	69-117	7	30
Chrysene	50	45.73	50	41.9	91	84	75-129	9	30
Dibenz(a,h)anthracene	50	46.09	50	41.19	92	82	65-126	11	30
Diethylphthalate	50	43.61	50	39.08	87	78	47-122	11	30
2,4-Dimethylphenol	50	40.26	50	37.71	81	75	40-99	7	30
2,4-Dinitrophenol	100	106.27	100	99.08	106	99	29-139	7	30
bis(2-Ethylhexyl)phthalate	50	49	50	44.84	98	90	64-126	9	30
Fluoranthene	50	47.81	50	43.16	96	86	74-126	10	30
Fluorene	50	43.2	50	38.75	86	77	67-120	11	30
Indeno(1,2,3-cd)pyrene	50	44.2	50	39.84	88	80	63-122	10	30
2-Methylnaphthalene	50	40.31	50	32.01	81	64	54-111	23	30
2-Methylphenol	50	44.64	50	41.41	89	83	50-104	8	30
4-Methylphenol	50	41.96	50	38.84	84	78	45-101	8	30
Naphthalene	50	41.48	50	35.38	83	71	54-109	16	30
4-Nitrophenol	50	26.42	50	24.04	53	48	22-78	9	30
Phenanthrene	50	48.22	50	43.8	96	88	72-117	10	30
Phenol	50	25.53	50	23.24	51	46	16-74	9	30
Pyrene	50	48.81	50	44.63	98	89	69-119	9	30
Pyridine	50	25.94	50	25.5	52	51	19-68	2	30
Quinoline	50	49.5	50	44.94	99	90	70-130	10	30
Batch number: 171710016A	Sample number(s): 9056751-9056752								
Ethylene dibromide	0.128	0.114	0.128	0.118	89	92	60-140	4	20
Batch number: 171730184801	Sample number(s): 9056751-9056752								
Cobalt	500	518.88			104		80-120		
Lead	150	158.72			106		80-120		
Nickel	500	522.46			104		80-120		
Vanadium	500	523.26			105		80-120		
Zinc	500	500.16			100		80-120		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 171710016A	Sample number(s): 9056751-9056752 UNSPK: P056014									
Ethylene dibromide	N.D.	0.121	0.110			91		60-140		

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Stantec
Reported: 06/28/2017 10:30

Group Number: 1815034

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 171730184801	Sample number(s): 9056751-9056752 UNSPK: 9056751									
Cobalt	N.D.	500	490.91	500	493.27	98	99	75-125	0	20
Lead	N.D.	150	147.08	150	145.68	98	97	75-125	1	20
Nickel	N.D.	500	485.53	500	489.37	97	98	75-125	1	20
Vanadium	N.D.	500	529.57	500	525.05	106	105	75-125	1	20
Zinc	N.D.	500	493.16	500	496.07	99	99	75-125	1	20

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc ug/l	DUP Conc ug/l	DUP RPD	DUP RPD Max
Batch number: 171710016A	Sample number(s): 9056751-9056752 BKG: 9056752			
Ethylene dibromide	N.D.	N.D.	0 (1)	30
Batch number: 171730184801	Sample number(s): 9056751-9056752 BKG: 9056751			
Cobalt	N.D.	N.D.	0 (1)	20
Lead	N.D.	N.D.	0 (1)	20
Nickel	N.D.	N.D.	0 (1)	20
Vanadium	N.D.	N.D.	0 (1)	20
Zinc	N.D.	N.D.	0 (1)	20

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: Evergreen Comprehensive VOCs

Batch number: Y171723AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9056751	103	102	99	93
9056752	101	102	97	99
9056753	103	103	97	90
Blank	101	103	98	91
LCS	95	99	100	101
LCSD	95	99	101	101

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Stantec
Reported: 06/28/2017 10:30

Group Number: 1815034

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: Evergreen Comprehensive VOCs
Batch number: Y171723AA

Limits: 80-116 77-113 80-113 78-113

Analysis Name: Skinner 8270C MINI
Batch number: 17173WAG026

	Phenol-d6	2-Fluorophenol	2,4,6-Tribromophenol	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
9056751	40	42	85	75	69	75
9056752	35	41	80	78	71	69
Blank	31	43	80	84	75	87
LCS	42	56	91	90	84	88
LCSD	38	52	84	84	77	83

Limits: 10-71 10-84 13-149 29-119 41-112 38-125

Analysis Name: EDB in Wastewater
Batch number: 171710016A

	1,1,2,2-Tetrachloroethane
9056751	105
9056752	101
Blank	101
DUP	105
LCS	101
LCSD	105
MS	104

Limits: 46-136

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody



Lancaster Laboratories
Environmental

For Eurofins Lancaster Laboratories Environmental use only

Acct. #

16657

Group #

1815034

Sample #

9056251-53

COC # 534060

Client Information				Matrix				Analysis Requested												For Lab Use Only			
Client: <u>Stantec Consulting</u>		Acct. #:		<input type="checkbox"/> Tissue		<input checked="" type="checkbox"/> Ground		<input type="checkbox"/> Surface		Preservation Codes												FSC: _____	SCR#: <u>207769</u>
Project Name/ #: <u>MHIC AQL 5</u>		PWSID #:		<input type="checkbox"/> Potable		<input type="checkbox"/> NPDES		<input type="checkbox"/> Other:														Preservation Codes	
Project Manager: <u>Jenny DeBoer</u>		P.O. #:		<input type="checkbox"/> Sediment		<input type="checkbox"/> Water																H=HCl T=Thiosulfate	
Sampler: <u>Jim Craft</u>		Quote #:		<input type="checkbox"/> Soil																		N=HNO ₃ B=NaOH	
State where samples were collected: <u>PA</u>		For Compliance: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		<input type="checkbox"/> Composite																		S=H ₂ SO ₄ O=Other	
Sample Identification		Collected		Grab	Composite	Soil	Water	Other:	Total # of Containers													Remarks	
Date	Time																						
MW-554-20170616	6/16/17	1445	X				X		8	X	X	X	X						* See Attached				
MW-583-20170616	6/16/17	1625	X				X		8	X	X	X	X						Evergreen				
TB-20170616	6/16/17	-	*					X	1										Comprehensive List				
																			for analytes				
																			** Lab filter				
																			all Metals				
Turnaround Time (TAT) Requested (please circle)				Relinquished by				Date		Time		Received by				Date		Time					
Standard <u>Rush</u>				<u>Bottle Storage</u>				6.14.17		8:15		<u>Jim R</u>				6.14.17		8:15					
(Rush TAT is subject to laboratory approval and surcharge.)				Relinquished by <u>Jim R</u>				6.14.17		12:00		Received by <u>Jim R</u>				6/14/17		12:00					
Date results are needed: <u>5 Day TAT</u>				Relinquished by <u>Jim R</u>				6/16/17		10:42		Received by <u>Jim R</u>				6.16.17		10:42					
E-mail address: <u>Jenny.DeBoer@Stantec.com</u>				Relinquished by <u>Jim R</u>				6.16.17		12:52		Received by <u>Jim R</u>											
Data Package Options (circle if required)				Relinquished by				Date		Time		Received by <u>ES</u>				6/19/17		12:52					
Type I (EPA Level 3 Equivalent/non-CLP)		Type VI (Raw Data Only)																					
Type III (Reduced non-CLP)		NJ DKQP TX TRRP-13																					
NYSDEC Category A or B		MA MCP CT RCP																					
EDD Required? <u>(Yes)</u> No				Relinquished by Commercial Carrier:																			
If yes, format: <u>EQUISEFW Stantec</u>				UPS _____ FedEx _____ Other _____																			
Site-Specific QC (MS/MSD/Dup)? Yes No				Temperature upon receipt <u>0.7</u> °C																			
(If yes, indicate QC sample and submit triplicate sample volume.)																							

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The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

7044 0216

10657 | 1815034 / 9086751-53

Evergreen Comprehensive List (June 2016)

VOCs by EPA Method 8260	CAS No.	SVOCs by EPA Method 8270	CAS No.
Benzene	71-43-2	Acenaphthene	83-32-9
Butylbenzene, sec-	135-98-8	Anthracene	120-12-7
Butylbenzene, tert-	98-06-6	Benzo(a)anthracene	56-55-3
Cumene	98-82-8	Benzo(a)pyrene	50-32-8
Cyclohexane	110-82-7	Benzo(b)fluoranthene	205-99-2
Dichloroethane, 1,2-	107-06-2	Benzo(g,h,i)perylene	191-24-2
Ethylbenzene	100-41-4	Benzo(k)fluoranthene	207-08-9
Ethylene Dibromide*	106-93-4	Biphenyl, 1,1-	92-52-4
Hexane	110-54-3	Bis(2-ethylhexyl) phthalate	117-81-7
Methyl tert butyl ether	1634-04-4	Chrysene	218-01-9
Toluene	108-88-3	Cresol, m- (3-methylphenol)	108-39-4
Trimethylbenzene, 1,2,4-	95-63-6	Cresol, o- (2-methylphenol)	95-48-7
Trimethylbenzene, 1,3,5-	108-67-8	Cresol, p- (4-methylphenol)	106-44-5
Xylenes	1330-20-7	Dibenz(a,h)anthracene	53-70-3
		Diethyl phthalate	84-66-2
		Dimethylphenol, 2,4-	105-67-9
		Dibutyl phthalate, n-	84-74-2
		Dinitrophenol, 2,4-	51-28-5
		Fluoranthene	206-44-0
		Fluorene	86-73-7
		Indeno(1,2,3-cd)pyrene	193-39-5
		Methylnaphthalene, 2-	91-57-6
		Naphthalene**	91-20-3
		Nitrophenol, 4-	100-02-7
		Phenanthrene	85-01-8
		Phenol	108-95-2
		Pyrene	129-00-0
		Pyridine	110-86-1
		Quinoline	91-22-5
Metals by Method 6010/6020	CAS No.		
Cobalt ***	7440-48-4		
Lead***	7439-92-1		
Nickel***	7440-02-0		
Vanadium***	7440-62-2		
Zinc***	7440-66-6		

*Ethylene Dibromide (EDB) should be analyzed by Method 8011 instead of 8260 in soil for tank investigations and in **all groundwater samples**. EDB in all trip blank samples should be analyzed by 8260 regardless of method used for primary samples.

**Naphthalene should be analyzed by EPA Method 8260 instead of 8270 for tank investigations.

***Metals analysis should be total in soil and dissolved in groundwater.

This list is generated from the PADEP SERO Crude Oil Parameters for Corrective Action (CDB|SERO|PADEP|9 Aug 2013) combined with PADEP Short List of Petroleum Products (leaded and unleaded gasoline and No. 1, 2, 4, 5, 6 Fuel Oils).

Client: STANTEC CONSULTING**Delivery and Receipt Information**

Delivery Method:	<u>ELLE Courier</u>	Arrival Timestamp:	<u>06/19/2017 12:52</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>PA</u>		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	Yes
Samples Chilled:	Yes	VOA Vial Headspace \geq 6mm:	No
Paperwork Enclosed:	Yes	Total Trip Blank Qty:	2
Samples Intact:	Yes	Trip Blank Type:	HCL
Missing Samples:	No	Air Quality Samples Present:	No
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

*Unpacked by Evelyn Shank (12390) at 13:17 on 06/19/2017***Samples Chilled Details***Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT42-02	0.7	DT	Wet	Y	Bagged	N

General Comments: Quantity of 1 TB on COC, 2 was sent.

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mg	milligram(s)
C	degrees Celsius	mL	milliliter(s)
cfu	colony forming units	MPN	Most Probable Number
CP Units	cobalt-chloroplatinate units	N.D.	none detected
F	degrees Fahrenheit	ng	nanogram(s)
g	gram(s)	NTU	nephelometric turbidity units
IU	International Units	pg/L	picogram/liter
kg	kilogram(s)	RL	Reporting Limit
L	liter(s)	TNTC	Too Numerous To Count
lb.	pound(s)	µg	microgram(s)
m3	cubic meter(s)	µL	microliter(s)
meq	milliequivalents	umhos/cm	micromhos/cm
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...
- W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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Additional Data Qualifiers

Qualifier	Definition
B	Detection in the Blank
Q0	LCS/LCSD Low
Q1	LCS/LCSD High
Q4	MS/MSD Out of Range
Q7	LCS/LCSD RPD
Q8	DUP RPD
Q9	MS/MSD RPD
Z	Laboratory Defined - see analysis report